

# GSFC Quality Management System (QMS)

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## ISO and the QMS

**New and Improved**

March 6, 2003

OSSMA Education Series Presentation

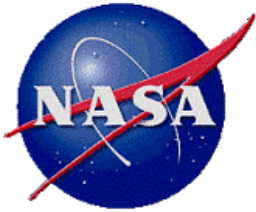
Harold Mitchell

Code 306, Systems Management Support Office

Quality Management System Council Executive Secretary

Phone: 6-5628

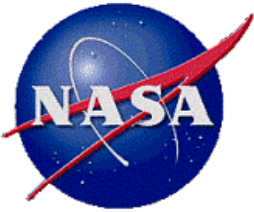
[Harold.E.Mitchell@nasa.gov](mailto:Harold.E.Mitchell@nasa.gov)



# GSFC Quality Management System (QMS)



- What is happening with the ISO Standard?
  - ISO 9001:2000 revision published December 13, 2000
  - ISO 9001:1994 “canceled”
  - Registered organizations have until December 13, 2003 to successfully transition to ISO 9001:2000 registration or face ISO de-registration

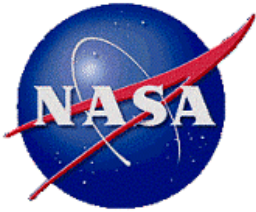


# GSFC Quality Management System (QMS)



Wasn't the NASA ISO requirement going away?

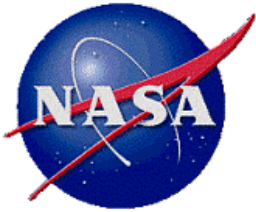
- As a result of F2M, NPD 1280.1 was drafted, reviewed and released.
  - Does not require ISO compliance.
  - However, Centers must describe (to Deputy Administrator) management systems and method of verifying effectiveness.
    - Third party registration to ISO 9001:2000 or AS 9100 would meet the requirement
    - Third party audits must be employed in any event
    - Centers could invent their own unique management system standard that meets the minimum criteria, subject to HQ approval
- GSFC Center Director decided to continue ISO certification.



# GSFC Quality Management System (QMS)



- Now what?
  - ISO 9001:2000 registration audit scheduled for August/September 2003
  - Schedule allows time to correct any major nonconformances before December deadline
  - Consequently, an ISO 9001:2000 compliant QMS must be in place in May 2003 to accommodate a full cycle of internal audits and the generation of at least 3 months of objective evidence



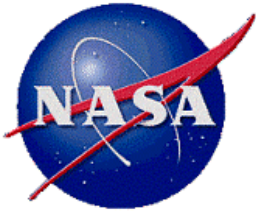
# GSFC Quality Management System (QMS)



- What is the QMS now?
  - The organizational structure, procedures, processes and resources needed to implement the quality policy, objectives and responsibilities by means such as quality planning, quality control, quality assurance and quality improvement.

*Characterized by:*

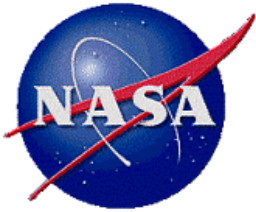
- *Lots of process documentation*
- *Reactive rather than pro-active customer satisfaction interfaces*
- *No real metrics requirements or practices*



# GSFC Quality Management System (QMS)



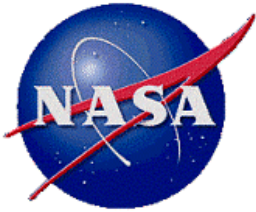
- What does the QMS need to become?
  - Same as before with these added primary capabilities:
    - Establishment of methods to measure the effectiveness and efficiency of processes;
    - Application of these measures to determine the effectiveness and efficiency of processes and their ability to achieve organization objectives;
    - Establishing and applying a process for continual improvement of the QMS;
    - Establishing methods for obtaining customer satisfaction data and using this data to enhance QMS effectiveness.



# GSFC Quality Management System (QMS)



- What else has changed in the standard?
  - Less documentation required
    - Because of GSFC size/complexity and regulatory requirements the number of written policies and procedures will not change significantly
  - Infrastructure provision and maintenance must be addressed
    - Maintenance program of flight hardware buildings/labs
    - IT security arrangements for QMS databases and spacecraft communications networks

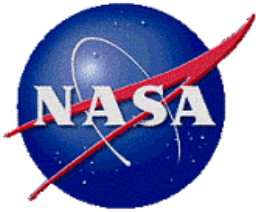


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- What else has changed in the standard (continued)?
  - Personnel competency needs and effectiveness must be addressed
    - Done via position descriptions, hiring practices and performance reviews



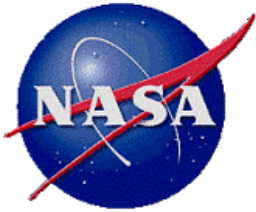


# GSFC Quality Management System (QMS)



- What are the big hurdles for GSFC?
  - Customer satisfaction data gathering and analysis
  - Establishment of consistent objectives at relevant levels within GSFC
  - Establishment of core processes and associated metrics and analysis methods at relevant organization levels to demonstrate objectives are being met
  - Demonstrating continual improvement efforts as a result of data analysis at relevant organization levels

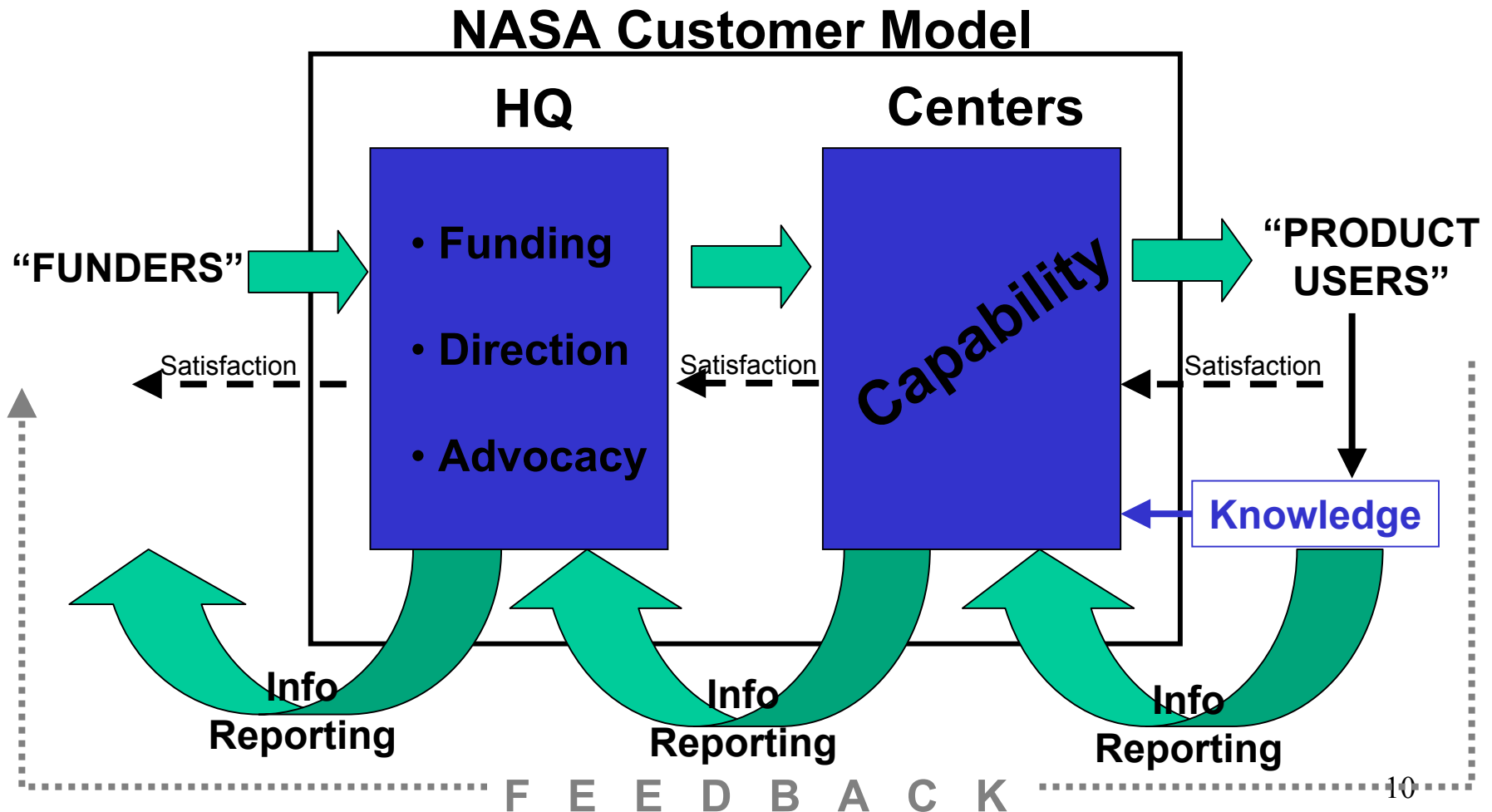
*The above weaknesses were confirmed in a May 2002 pre-assessment audit*

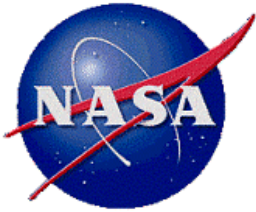


# GSFC Quality Management System (QMS)



## Hurdle 1: Customer Satisfaction Data and Analysis



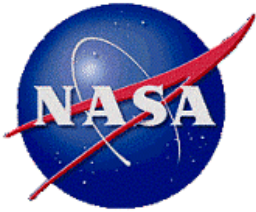


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## Hurdle 1: Customer Satisfaction Data and Analysis

- ISO requirements apply only to external customers
- NASA HQ, NASA Centers, Enterprise Offices can be considered internal customers
- GSFC external customers:
  - Reimbursables (e.g., NOAA, the NAVY at WFF)
  - The scientific community (e.g. PI's, users of Code 600/900 data centers)
  - The academic community serviced as part of education outreach



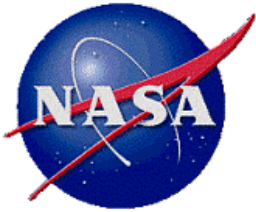
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## Hurdle 1: Customer Satisfaction Data and Analysis

### Examples

- Code 300 has no external customers
  - This does not mean that internal customer satisfaction measures can't or won't be used to assess OSSMA process effectiveness if not "customer satisfaction" (ironic isn't it?)
- WFF web-based customer input system
- Codes 600 and 900 science visiting committee inputs
- Codes 600/900 and/or 400 science working group inputs/perceptions



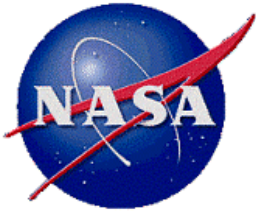
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## Hurdle 1: Customer Satisfaction Data and Analysis

In each case where external customer satisfaction data is gathered the organization must show:

- Evidence that the data is analyzed (what conclusions are drawn?);
- The analysis is used in continual improvement process at the organization and/or sub-organization level;
- Directorate-level metrics must feed into an overall Center level perception of customer satisfaction and necessary Center-level improvement efforts.



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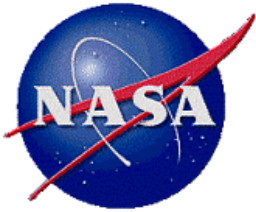


## Hurdle 2: Organization Objectives

All objectives stem from and should be relevant to the strategies, goals and objectives in the GSFC Strategic Implementation Plan (SIP)

<http://pao.gsfc.nasa.gov/GSFCStrategicImpPlan.pdf>

- Most SIP objectives are vague with no identified metrics
  - SIP is a multi-year document – hence the motherhood
  - GSFC has no related annual performance plan
- All Directorates and Code 110 have been tasked to develop objectives plans (Directorate and sub-Directorate levels)
  - Wayne Boswell, Code 101, will relate Directorate objectives to overall SIP



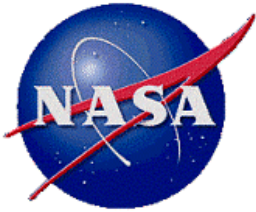
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## Hurdle 2: Organization Objectives

Example:

- OSSMA has an SIP  
[http://arioch.gsfc.nasa.gov/300/300/sip/SIP\\_2002.pdf](http://arioch.gsfc.nasa.gov/300/300/sip/SIP_2002.pdf)
- Suffers from the same “measurability” problems as the Center SIP
- OSSMA will have to define measurable objectives related to the SIP
  - Plan to use the AOA as the vehicle to define such objectives



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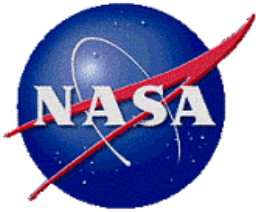


## Hurdle 3: Process Metrics and Analysis

Center Core Processes are defined in the SIP

- Core processes and essential services (aka “enabling processes”) form the scope of the GSFC QMS.
- Core processes fall almost entirely within Codes 400, 500, 600, 800, and 900. Other organizations provide essential services.
- Organizations have been tasked to define their core processes and the methods by which their effectiveness will be measured and analyzed.
  - Measures may rely on pro-active internal customer feedback.





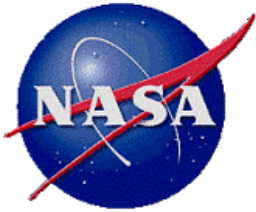
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## Hurdle 3: Process Metrics and Analysis

### Examples:

- OSSMA AOA established core processes at every level of the Directorate.
  - Value of associated metrics is being re-visited by OSSMA management.
  - Scheme for review and analysis of sub-organization metrics at the Directorate level needs to be established and implemented.



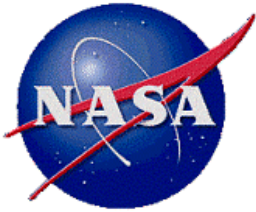
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## Hurdle 4: Continual Improvement

Continual improvement process must be demonstrated at all relevant organization levels

- At a minimum this means the Center and Directorate levels
- Continual improvement process should be the result of the analysis of all relevant data
  - Customer satisfaction
  - Audit results
  - Corrective and preventive actions
  - QMS Management Reviews
  - Objectives measurements
  - Product and process measurements

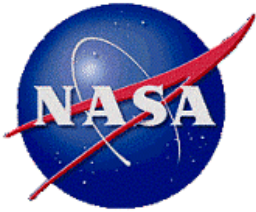


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## Hurdle 4: Continual Improvement

- Examples of structured continual improvement efforts within Directorates are lacking
- Examples at the Center level
  - Center-based F2M initiatives (don't tend to be QMS or product related)
  - Actions resulting from QMS Management Reviews
- Examples should increase once data gathering/analysis processes are in place

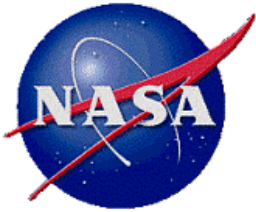


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## Other Preparations

- Membership of the QMSC altered to include representation at the Deputy Director Of level.
- Re-design of centralized nonconformance reporting system
  - Improve project customization
  - Improve ability to trend product problems
  - Allow product problems to be resolved without unnecessary resort to corrective action process
- RITS being examined as a result of widespread non-compliance with GPG 4520.2.

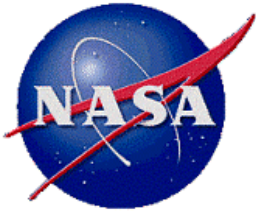


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## Other Preparations

- Spring 2003 internal audits of every Directorate
  - At Directorate level and sub-Directorate levels
  - Assess customer satisfaction measurement, objectives, objectives/process/product metrics, metrics analysis, and continual improvement process
- Consideration of a second NQA pre-assessment

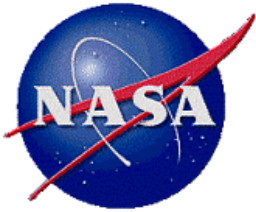


# GSFC Quality Management System (QMS)



What does all this mean to me?

- Executive Management
  - A primary focus of the ISO 9001:2000 changes
  - Will be bigger participants in audits
  - Must demonstrate decisions and actions are based upon data analysis
- Middle Management
  - Establish necessary metrics
  - Perform data analyses
  - Roll-up metrics/analyses to higher level organization

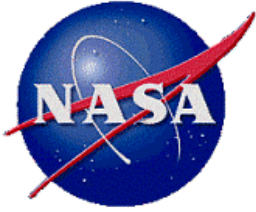


# GSFC Quality Management System (QMS)



What does all this mean to me?

- Working People
  - May be asked to periodically report metrics associated with your function (many already do this)
  - May be asked for input from internal suppliers
  - (Hopefully) Benefit from continual improvement process



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<http://arioch.gsfc.nasa.gov/iso9000/index.htm>